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ABSTRACT

This master plan for energy education consists of the following sections: (1) a rationale statement; (2) an energy policy statement; (3) general goals and objectives; (4) a status report for existing energy education programs in Florida; (5) an overview of alternative strategies for implementing an energy education program statewide; (6) organizational and implementation structure; (7) implementation plan and programs for major energy education target groups; (8) evaluation and assessment programs; and (9) environmental residual efforts. (Author/RH)

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FLORIDA MASTER PLAN AND ACTION GUIDE

FOR

ENERGY EDUCATION

STATE OF FLORIDA
DEPARTMENT OF ADMINISTRATION

STATE ENERGY OFFICE
108 COLLINS BUILDING
TALLAHASSEE, FLORIDA 32304

JULY 1, 1977

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CONSERVE ENERGY IN FLORIDA

FOREWARD

For the next two decades, Florida and the United States must cope with an extremely serious problem--the availability of sufficient energy to fuel our nation's economy and provide for the well-being of the citizens. The nation's ability to solve our problems depends on the abilities of our future leaders, and therefore on our educational systems.

This document is the initial step in energy education in Florida's public school system. It is comprehensive in scope and, when implemented, will provide a basic understanding of a complex situation. From basic understanding, intelligent choices will be made to carry us through.

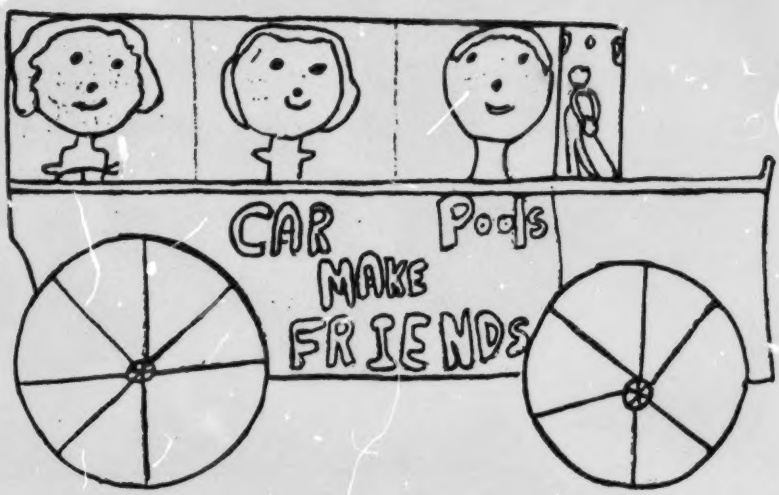
ACKNOWLEDGEMENTS

The State Energy Office wishes to express its appreciation for the extensive support and cooperation of the director and staff of the Florida Office of Environmental Education. Without their expertise and long hours of hard work this plan would not have been possible.

We are especially appreciative for the expert writing team chosen for their great interest in energy education and dedication to the schools and students of Florida.

A special thanks to Mrs. Rebecca Dickey and Mrs. Ann Stanton for their expert typing and proofing of this plan.

And, to those studuents of Florica schools who entered our poster contest and allowed us to use their entries for illustrations, we are most grateful. First grade through senior level are represented.



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RATIONALE

Florida is heavily dependent on other states and other nations to provide the energy essential for its continued existence.

The recent fuel shortages throughout the United States were startling reminders that we are connected to a world-wide web of energy relationships. It is essential that the public understand this web of energy relationships sufficiently to produce those behaviors which will allow the continued operation of those systems which provide the energy essential for the survival of our self-governing society.

Florida's energy education program should use the basics of the energy web as its content outline. This cognative structure should be used to develop practical understandings of the energy supply systems.

Although this document is designed primarily to provide technical assistance in program planning, it may be useful to outline the basics of an energy web. This would illustrate the interrelationships between production, transportation, and consumption of energy and the threads connecting these actions to ourselves as individuals and our biological environment. Additional threads of the energy web would connect with:

Energy and Economic Growth

Energy and Employment

Energy Cost

Energy and the Poor

Energy and the Food System

Energy in Foreign Affairs

Energy and Foreign Policy

Even the most cursory observation of this energy web reveals that energy education requires the skills of the sciences, mathematics, the social studies, the humanities--in fact, all of the academic disciplines.

Energy education program content should be the responsibility of the

local school system. Only those familiar with the local environment and local energy problems can extend the web to the individual where education can have an impact on energy efficiency.

Studies of specific energy systems should be designed locally. The state should provide technical assistance and encourage the development of understandings of the differences between the uses of systems based on a finite (non-renewable) energy supply as compared to those based on an infinite (renewable) supply.

A state energy program must be based on a solid foundation of effective school district energy management systems. An emerging concern, by school administrators about the energy situation, promises a future wherein students will live what they learn. It is essential that this be encouraged and promoted.

The subject of energy, containing some of the most crucial issues of our time, deserves a place in the school curriculum at all levels in all subjects. Energy is needed for everything we do; it is a basic part of the ecological web of life. It laces together the biological and physical environment, our lives and those of all living things, national and international policies, work and play.

The major task of alerting the public to the conditions of the energy problem should be of great concern to all educators. State and federal agencies should be encouraged to support funding of appropriate activities in education. Elected and appointed representatives at all levels should be encouraged to support legislation dealing with energy education, including education programs at the local, state, and national levels.

Florida is continually in the national limelight. Our state must resolve its energy problems with every caution to protect our environmentally dependent tourist and agriculturally-based economy. This document contains the basic elements for the development of a model energy education program.

We look now to the educational community, assisted by public and private agencies, to develop programs which will deal with our state and our nation's energy problems--truly a major societal concern.

ENERGY POLICY FOR FLORIDA

PREPARED BY THE STAFF OF THE

STATE ENERGY OFFICE OF FLORIDA

IN CONJUNCTION WITH

TEN REGIONAL ENERGY ACTION COMMITTEES

AND THE

STATE ENERGY ADVISORY COUNCIL

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1977

ENERGY POLICY FOR FLORIDA

WHEREAS, energy availability strongly impacts upon every aspect of human existence and the conservation of energy resources is essential to the health, safety, and welfare of the people of this state and to the well-being of the state economy, and

WHEREAS, Florida is particularly dependent upon other states and nations to supply its energy needs, and

WHEREAS, the majority of Florida's energy requirements are obtained from petroleum and natural gas, and supply of these fuels are subject to interruption, and

WHEREAS, wasteful, inefficient, uneconomic, and unnecessary use of energy will result in a serious depletion of energy resources and represents a potential threat to preserving the health, safety, and welfare of the people of Florida, and

WHEREAS, alternative sources of energy are years from being fully developed and there is a pressing need to accelerate research and development of these sources, and

WHEREAS, energy conservation represents a meaningful, immediate, and appropriate state response to the energy problem by eliminating waste and inefficiency and increasing economic productivity, by reducing the depletion of our domestic energy resources which, in turn, increases economic flexibility of the people of Florida, and by decreasing the pressure to develop marginally efficient methods of energy production and thereby reducing the flow of capital from the non-energy sections of the economy and avoiding serious impacts on our environment, NOW, THEREFORE,

BE IT RESOLVED

IT SHALL BE THE POLICY OF THE STATE OF FLORIDA TO:

1. Develop and promote the effective use of energy in the state and to discourage all forms of energy waste.
2. Play a leading role in developing and instituting energy management programs aimed at promoting energy conservation; to include energy considerations in all planning; and to utilize and manage effectively energy resources used within state agencies.
3. Encourage local governments to include energy considerations in all planning, to support their work in promoting energy management programs, and to include the full participation of citizens in the development and implementation of energy programs.
4. Consider in its decisions the energy needs of each economic sector, including residential, industrial, commercial, agricultural and governmental uses.
5. Promote energy education and the public dissemination of information on energy and its environmental, economic and social impacts.
6. Encourage the research, development, demonstration, and application of alternative energy resources, particularly renewable energy resources.
7. Consider in its decision making the social, economic and environmental impacts of energy-related activities so that detrimental effects of these activities

are understood and minimized.

8. Develop and maintain energy emergency preparedness plans to minimize the effects within Florida of an energy shortage.

GENERAL GOALS AND OBJECTIVES

PROGRAM GOALS

To incorporate effective interdisciplinary and disciplinary energy education materials in all levels of the formal school program, pre-school through adult education, community colleges, and institutions of higher learning.

To provide effective energy education materials and resources for local community use through existing citizen groups.

To utilize the energy education resources of other public and private bodies in the development and implementation of state-wide energy education programs.

To facilitate dissemination, communication and sharing of energy education resources through a regional and state-wide program of workshops and energy seminars.

To maintain a close working relationship with the Florida Department of Education, particularly the Office of Environmental Education, to facilitate education programs.

To provide an energy education technical advisory committee consisting of representatives from appropriate agencies and organizations with a strong interest in energy conservation. The primary functions of the committee should be to provide the State Energy Office with recommendations for program development, screen energy education materials, and help develop strategies for effective energy education implementation.

To provide the general public with practical positive energy conservation activities which demonstrate and reinforce the direct savings in money and energy consumption.

ENERGY EDUCATION GOALS

To develop a citizenry which is aware and knowledgeable of energy issues, problems, concerns of the energy alternatives available and acts with an energy conservation ethic in its daily lifestyle.

To develop a Florida state-wide energy education program which provides all components of the citizenry with an effective energy education program.

To facilitate an effective energy education action program which combines the existing and potential resources of formal public education, community citizens, governmental agencies and bodies, the private industrial/commercial sector, and citizen organizations.

To facilitate energy conservation through the provision of a source of public funds to catalyze implementation of energy conservation at the local community and school level.

To develop public awareness through energy education that energy problems are symptoms of larger environmental/economic problems worldwide.

To reduce, through effective energy education and management, the consumption of energy in Florida.

DESIRED OUTCOMES OF FLORIDA ENERGY EDUCATION PROGRAM

An overall reduction of energy consumption within the school districts of Florida.

The development of a state-wide coordinated program for energy education which synergizes the resources of the public and private schools.

A knowledgeable citizenry that practices an energy conservation ethic and is prepared to deal with energy problems.

Public agency and education institutions which serve as models of wise energy use through effective energy-use practices.

STATUS REPORT FOR EXISTING ENERGY EDUCATION PROGRAMS IN FLORIDA

STATE ENERGY OFFICE

Energy education became a major function of the State Energy Office in April of 1976 when an Energy Education Specialist was hired. Prior to this time, the major efforts in education were of a public information nature. The Energy Education Specialist has conducted a survey inventorying school districts for information about energy management program plans, curriculum, types of energy used, workshops conducted and other pertinent questions.

Community colleges and universities were surveyed as to energy curriculum, research and development, and energy conservation in the physical plant.

These surveys have provided helpful information for planning energy education programs.

Other activities in energy education include a conference, jointly sponsored by the State Energy Office and the Office of Environmental Education, where representatives from 30 school districts were encouraged to begin their own energy management programs.

An energy conservation poster contest was conducted with each school district invited to participate. Three state winners came to Tallahassee and were presented awards by Lt. Governor Williams. Regional and state winners' posters were displayed in the Capitol during the 1977 session.

Materials, free and/or inexpensive, have been disseminated on request. Semi-technical materials on energy have been published for limited distribution. Energy displays to malls, public buildings, teacher organization meetings, etc. have been provided. Presentations have been made to various community organizations. The Energy Education Specialist has assisted in teacher workshops, garden club programs, and has worked directly with teachers who are teaching about energy.

OFFICE OF ENVIRONMENTAL EDUCATION

Recent public awareness of environmental and other energy related problems led to the establishment of the Florida Office of Environmental Education within the Department of Education. This office is strategically located directly on the Commissioner of Education's staff and enjoys a unique prominence in state educational structures. The field staff of this office are in regular contact with teachers and principals throughout the 67 school districts of Florida. Each district and each school within that district has a person responsible for implementing environmental education. This structure of field coordinator, district contact, and school resource person provides the mechanism for implementing energy education programs in Florida.

The Office of Environmental Education has been emphasizing energy conservation as a part of its state-wide environmental education program since 1970. The office has disseminated free and inexpensive energy education materials from federal, state, and private agencies to the 67 school districts. Grants have been provided since 1973 to local schools and school districts for the development of energy conservation programs and materials. During the 1974-1975 school year, energy education was declared an area of priority concern by the Department of Education. This designation resulted in concentrated curriculum development in several school districts.

The Office of Environmental Education, in cooperation with the State Energy Office, conducted a one-day conference for school district energy management staff in May of 1976. At that conference outstanding systems plans were identified.

During the 1976 school year, the publication, "Broward County

Energy Conservation Program," provided interested school districts with an overview of the Broward plan which produced a more than 5-million kilowatt hour reduction in electricity consumption during one school year. Many school districts have adopted portions of this plan which fit their needs.

Early in 1977, the DOE published the details of Palm Beach County's Energy Management Plan. This plan contains a built-in incentive to encourage participation by administrators, teachers, and students. This second publication will provide further ideas for interested school districts.

Ralph D. Turlington, Commissioner of Education, in his 1974 report to the Florida Legislature emphasized the Department's interest in the following manner: "Florida is committed to environmental education. The environment consists of only two measurable entities--matter and energy. We recognize our responsibility to encourage energy education at all levels with increased energy efficiency as one of its final objectives."

LOCAL SCHOOL DISTRICTS

Florida has several outstanding energy education programs now underway. Four examples will be cited. Although they are outstanding, it is not implied that they are "best." They are included to suggest the potential for excellence which can be realized when a state-wide coordinated program is implemented.

The Broward County and Palm Beach County Energy Management Plans are examples of effective systems which can provide an energy conservation environment, allowing students to live what they learn.

The Pasco County Energy Education Project and the Lee County energy education materials are examples of effective program and curriculum development. Assisted by the Department of Education's environmental education mini-grants and Title IV-C federal funds, these districts have developed hands-on energy experiences, K-12 energy curriculum teaching units, energy education interdisciplinary activities, card-pack units, and alternate energy demonstrations at the school level.

COLLEGES AND UNIVERSITIES

Innovative energy education workshops for secondary school teachers have been conducted by the Environmental Education Project at Florida State University. These workshops received support from E.R.D.A. and focused on both the content of energy education and the development of functional teaching materials.

As a result of these workshops, there has been much demand for reprints of the teacher-developed units and in-service teacher education programs that focus on the proper utilization of the materials.

LOCAL GOVERNMENT

The Mayor's office at Jacksonville, Florida has played an active role in encouraging efficient energy use. The office has employed a specialist to

assist schools and citizen groups who are studying energy conservation techniques. The office has distributed free energy education materials to Duval County Schools.

TEACHERS' ORGANIZATION

FERDC conducted a workshop where school district energy management systems already in effect were shared with other school district personnel.

WASTING ENERGY IS OLD – FASHIONED

OVERVIEW OF ALTERNATIVE STRATEGIES FOR IMPLEMENTING AN ENERGY EDUCATION PROGRAM STATE WIDE

Components:

....FORMATION OF A MECHANISM TO FUND THE DEVELOPMENT OF ENERGY EDUCATION MATERIALS needed to effectively implement Florida's program in the formal and non-formal public and private sectors including printed materials, multi-media programs, and mass communications-targeted products identified by the Energy Office and Energy Education Technical Advisory Committee.

....REGIONAL ENERGY ACTION! COMMITTEES will assist in the dissemination of energy-related information by:

1. Establishing education sub-committees to implement specific community energy education programs.
2. Assisting with and encouraging energy education programs by other regional organizations.
3. Providing other public assistance programs as deemed appropriate by the State Energy Office and the individual REAC, such as establishing libraries, speakers' bureaus, energy extension services, incentives/awards programs.

....CONTRACT WITH OFFICE OF ENVIRONMENTAL EDUCATION

The State Energy Office will contract with the Office of Environmental Education, Florida Department of Education, for the implementation of a program to encourage and fund local schools and school districts to develop meaningful localized energy education projects or programs.

....MATERIALS DEVELOPMENT AND DISSEMINATION

1. Develop an exemplary energy education series to acquaint teachers with energy concepts, conservation strategies, and instructional materials.
2. Formation of an energy education materials technical advisory committee to: a) screen, field-test and recommend existing energy education resource materials; b) identify specific areas and products of energy education materials that need to be developed; c) make recommendations on implementation strategies.

....COLLEGES AND UNIVERSITIES

Colleges and universities can play an important role in energy education. The colleges and universities will be urged to incorporate energy concepts into established curricula and additional required and elective courses in energy will be encouraged and supported.

Experts from the various disciplines from the colleges and universities will be utilized for materials development and implementation strategies.

An important function of the colleges and universities is to offer community education courses to inform the citizens of energy problems and conservation techniques.

Other important roles colleges and universities can play in the energy education program are in providing undergraduate education seminars that utilize inter-disciplinary approaches to the study of energy and pre-service and in-service energy education for teachers.

....UTILIZATION OF EXISTING PUBLIC AND PRIVATE AGENCIES AND ORGANIZATIONS

The State Energy Advisory Council, consisting of representatives from each state agency, will be the vehicle for coordinating energy education activities targeted toward those agencies. This council, chaired by the State Energy Office Director, is already functioning as a vehicle to recommend state energy policies. Energy education materials and programs will move through each agency representative to the administration and staff of all state departments.

Most Florida conservation and civic organizations are requesting programs on energy conservation. All such organizations will be encouraged to form energy committees. They will be provided technical assistance in implementing public energy conservation programs.

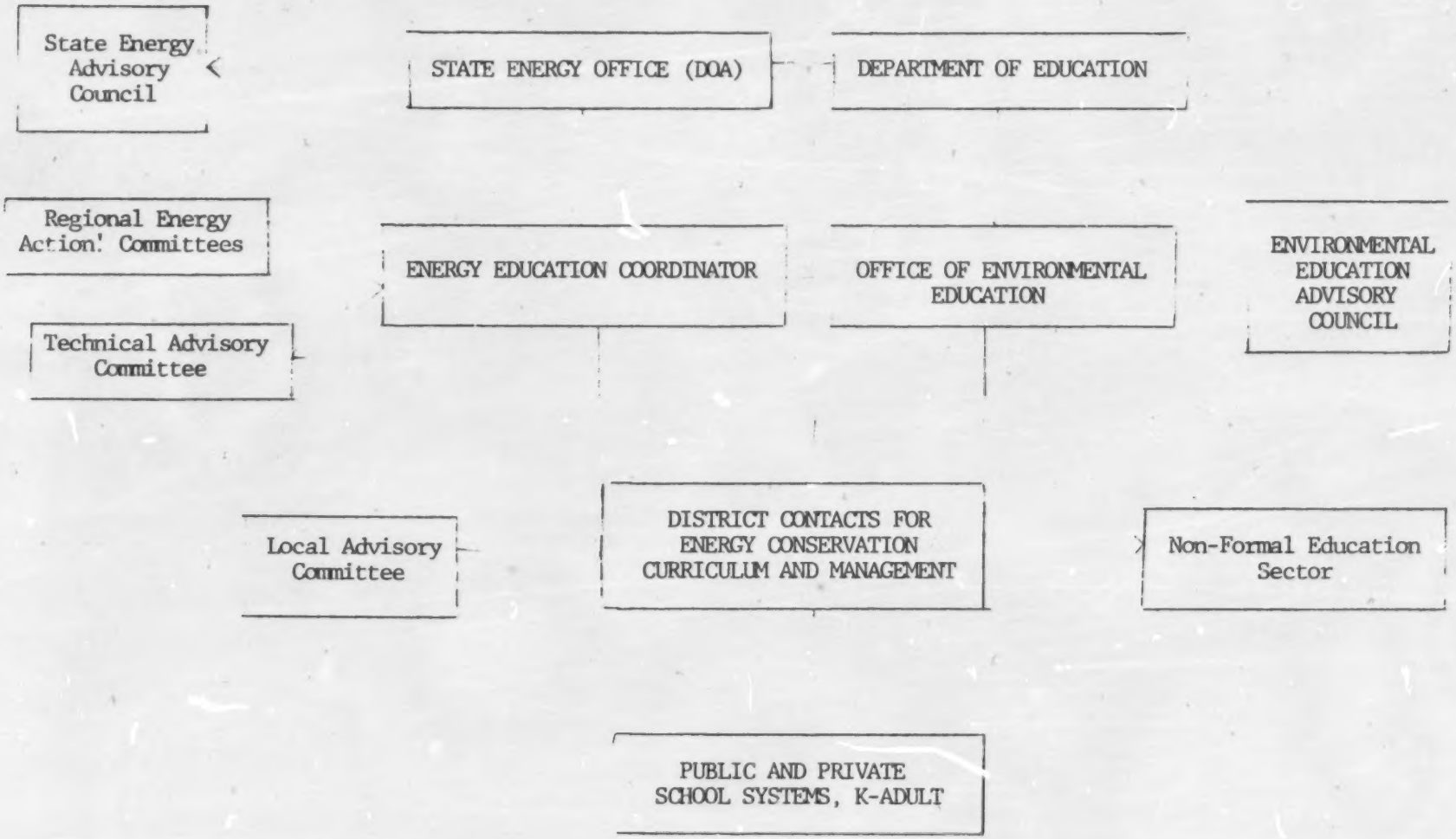
The public communications media of Florida will receive information on school

plant energy management programs, the products of the Office of Environmental Education contract, the programs of the Regional Energy Action! Committees, and the programs conducted by private conservation and other civic organizations. Media involvement will vastly magnify the adult education impact of the programs.

....DEVELOPMENT OF WORKSHOPS AND SEMINAR LEADERSHIP COMMUNICATION, ARTICULATION, AND TRAINING PROGRAM

1. Workshop for government agencies and state-wide organization and private sector representatives to:
   a. Inventory existing energy education programs and materials.
   b. Facilitate state-wide plan for cooperation.
2. One dissemination-training workshop in each energy region to catalyze, stimulate and coordinate implementation.
3. One state-wide conference to gather, disseminate, and evaluate year 1 program activities and products.
4. School administrator/teacher-oriented workshops.
5. School plant managers/supervisors energy conservation workshop, Public Schools Energy Conservation Service (PSECS). The PSECS is a computer-based technical service designed for school district self-audits.
6. Colleges and Universities Energy Conservation Workshop Program.

ORGANIZATIONAL AND IMPLEMENTATION STRUCTURE


State Energy Advisory Council
STATE ENERGY OFFICE (DOA)
DEPARTMENT OF EDUCATION
Regional Energy Action Committees
ENERGY EDUCATION COORDINATOR
OFFICE OF ENVIRONMENTAL EDUCATION
ENVIRONMENTAL EDUCATION ADVISORY COUNCIL
Technical Advisory Committee
Local Advisory Committee
DISTRICT CONTACTS FOR ENERGY CONSERVATION CURRICULUM AND MANAGEMENT
Non-Formal Education Sector
PUBLIC AND PRIVATE SCHOOL SYSTEMS, K-ADULT

IMPLEMENTATION PLAN AND PROGRAM FOR MAJOR ENERGY EDUCATION TARGET GROUPS

Phase I - The State Meeting

To adequately reach target population groups in both the formal and non-formal educational sectors, a state-wide series of regional workshops will be conducted.

The state-wide conference will be targeted on school administrators, community leaders, district energy conservation people, and representatives from governmental agencies. In addition, key persons from citizen action groups will participate to provide functional liaison with non-formal community educators.

The objectives of the state-wide conference are to enable participants to understand the major educational implications of energy conservation and create an awareness of curriculum materials and facility plans designed with an energy conservation focus. In addition, workshop participants will become familiar with over-all strategics for designing and implementing regional workshops. This combination of energy concepts and implementation skills provide the impetus for successful regional level (Phase II) workshops.

Environmental education regional coordinators, university coordinators, representatives from such non-formal educational sectors as the Florida Federation of Garden Clubs, League of Women Voters, Florida Audubon Society, and state agencies such as the Department of Natural Resources and the Florida Energy Office will meet together and form the nucleus of energy educational teams. These teams will receive intensive training in the rationale, concepts, and methodology needed to implement energy conservation on a state-wide basis. Consultants rrom the Florida Energy Office, Office of Environmental Education, and others will conduct this workshop. In addition, regional teams will learn the methodology of planning and conducting similar workshops in their regions.

Current plans call for targeting this state-wide conference toward citizen group representatives, governmental agency representatives, and school district personnel. The purpose for this is two-fold. Experience has indicated these teams will carry the bulk of the work during program implementation. By keeping the state workshop small, intensive training can occur. This increases the confidence of the participants and emphasizes the importance of their individual contributions.

Planning is essential to the success of workshops. Participants in the state workshop will be encouraged to include representatives from the target population of regional and district workshops early in the planning stages. For example, if a regional workshop is aimed at industry leaders, it is essential that industry leaders be included in the planning.

Phase II - The Regional Workshops

Energy regional workshop (to follow state-wide, non-formal conference) will be conducted by personnel from the State Energy Office and Office of Environmental Education, selected participants of the state workshop, and consultants/presentors with specific areas of expertise. The regional workshop will be targeted on school administrators, community leaders, energy conservation people, and representatives from governmental agencies.

Objectives:

A. Disseminate information from state workshop to wider audience.

B. Inform participants of energy audit program.

C. Define specific regional goals that will implement over-all energy education rationale.

D. Inform education district participants of program of the Office of Environmental Education.

E. Create enthusiasm, commitment, perception of local needs.

F. Coordinate efforts of universities, vocational/technical institutions, and public/private schools in the region. Encourage pooling resources and expertise to implement energy

education in their region.

G. Create awareness of energy management programs, energy education materials available, method/media alternatives, energy education programs in existence that are available for adaptation/adoption.

Attendees to these workshops can then institute training/information programs within each institution, city, organization, or school district.

Regional workshops should form the basis for activating and informing each "district contact for energy conservation curriculum and district contact for management" of state program for energy education.

Phase III - Local School Districts Programs

Without the cooperation and support of the district school administration, there is little chance for an active and successful energy education and energy management program. Through the appointment of energy education contacts on the local level to be responsible for disseminating energy education information, managing amounts of energy consumed, the district superintendents have indicated an initial desire to be cooperative in the establishment of energy education programs. Continued communication and guidance is imperative in order to gain enthusiastic support and to ensure that the comprehensive philosophy of energy education that has been envisioned will be understood on the local level.

At the elementary and secondary levels, the trend in energy education has been to integrate energy education into the existing curriculum and to utilize the local environment and community resources to teach about energy.

The Florida Energy Office, in cooperation with the Office of Environmental Education in the Department of Education, will continue to encourage the development of interdisciplinary education programs at the district

level. These programs should serve as relevant, community-oriented, and community-supported frameworks for the general education efforts of the districts.

The Office of Environmental Education and the State Energy Office will provide technical assistance to the districts on request. As a minimum, the following services will be readily available:

1. Identification and delivery of curriculum materials.
2. Assistance to counties in utilization of community resources.
3. Assistance in school-site development for energy education.
4. Assistance in off-campus energy education.
5. Curriculum materials on energy in our lives.
6. Curriculum materials and a communications system for K-12, community colleges, and universities.
7. Strategies and implementation techniques for in-service activities related to all the above program needs for teachers, staff, and school board.
8. Disseminating exemplary school (plant) management plans.

District programs which are to be recognized as examplary in nature should:

1. Reflect the conceptual framework expressed in this document.
2. Be produced or adapted by district staff and/or environmental education or energy conservation committees.
3. Provide the following basic emphasis:

   Primary Level - awareness of energy systems and of the variety of types of energy use in the area. Incorporation of energy teaching materials and strategies into the basic skills development areas of the curriculum. Clear evidence that the abstractions inherent in basic

students are based on observable, familiar objects from the local community environment. Awareness of man's changing uses of energy.

Intermediate Level - This level should emphasize the identification and examination of problems with a consomitant development of greater depth of comprehension of the local environments, the web of energy relationships operating therein, and the human problems involved. The skills and pleasure of information collection should be emphasized.

Secondary Level - These students should practice the data collection and political-action skills important in a democratic society. This is the level where interrelationship between the energy systems and cultural systems should be emphasized. Factual information on local environments and energy problems is essential at this level.

COLLEGES AND UNIVERSITIES

The university engages in basic research; it supports elementary and secondary education; it engages in vocational training; it provides undergraduate instruction, professional education and advanced scientific training, formal adult education, informal education through educational television, and extension services. Because of the interdisciplinary nature of energy education, it should be related to all these levels of endeavor.

A. General Education

All students should be provided with the tools which are necessary to help in the solution of energy problems. Some of the basic tools which should be provided through a general education instructional program are:

1. Understanding of our energy resources, their characteristics, status, distribution, and importance to man.
2. Economic awareness and understanding of economic theory to better understand the role of economics in energy decisions.
3. Political awareness of the American political process at the national, state, and local level, and stress ways that the individual can be

effective in helping promote sound decisions concerning energy and its usage.

4. Problem solving ability that includes the ability to define the problem, consider alternatives and arrive at a solution based on facts.
5. An understanding of alternative life styles.

B. Pre-Service and In-Service Teacher Education:

A well trained teacher is the key to a successful energy education program. Teachers must be instructed in the philosophical, scientific, technological and social aspects of the energy crisis. In addition, they must be given training in specific techniques of teaching energy education at particular grade levels or subject areas.

Teacher education programs should provide for the following:

1. Familiarization with energy resources and the problems and practices pertinent to local, state, regional, national and world welfare.
2. Acquisition of knowledge and training in the techniques of energy education.
3. Review of available public and private programs, services, and sources of information and assistance.
4. Training and communication skills which will enable teachers to assist students to acquire knowledge relative to energy principles and concepts.
5. A review of the literature regarding theories of learning and instruction that apply to the formulation and implementation of an energy education program.
6. Training in techniques of integrating energy education concepts into varied subject matter areas.

C. Employee Training in Energy Management

Factories, laboratories, research stations, school districts, federal, local, and state governments dealing with the energy problems are, as a whole, inadequately staffed. Unprecedented efforts will be required

merely to keep up with, let alone overtake, the effects of energy requirements, especially when supplies are scarce. In public and private sectors additional manpower must be trained in fundamental energy management skills.

Universities and community colleges will be expected to train energy experts at the professional and technical levels. (The professional level includes persons having B.S., B.A. or higher degrees. Those at the technical level will usually be classified as technicians with a two year associate degree.)

Responsibilities in this area include:

1. Development of estimates of the energy manpower supply, vacancies, needs and production.
2. Collection of data on staffing levels necessary to attain a determined level of expertise.
3. Production of workable models for providing manpower and supply.
4. Devising workable models for predicting manpower and supply.
5. Improving the quality and quantity of training and research.
6. Deepening interrelationships in cooperative research and curriculum development.

RECOGNIZING INTER-DEPENDENCY

Florida's energy problems are so much a part of the public concern that almost all public agencies and private organizations are involved in some degree in energy education.

Private organizations with expressed energy education interests are too numerous to list. However, most such organizations would tend to fall within the following general groups:

Labor organizations

Environmental/Conservation Organizations

Religious Institutions and Groups

Garden Clubs

Early Childhood and Children Under Six Educational Associations

Civic and Social Service Organizations

Business and Industry

Associations for Retired Persons

Student/Youth Environmental Organizations

Professional Associations and Organizations

Private Schools and Day-Care Centers

Health Organizations

Media Organizations

All such organizations have available within their membership persons with expert knowledge on most of the major energy/environmental topics which should be a part of a state program. Some organizations provide small grants and expense allowances to assist teachers and students. Perhaps the most important contribution these organizations make to a comprehensive program is that they approach the energy/environmental issues with differing local interests, yet common goals. They provide an enormous educational force to advise and assist formal school programs.

Form a car pool!

COMMUNITY/CITIZEN PROGRAMS

1. Project Conserve

   Code Officials

   Homeowners

   Engineers

   Architects

   Builders

   Developers

   Local Planning Officials

2. Regional Energy Action! Committee Projects
3. Drive 55 Campaign
4. Driver's Training in Education

   School System

   Driver's License Bureau of Department of Highway Safety and Motor Vehicles

   Inspection Stations of Highway Safety and Motor Vehicles

5. Small Commercial and Industrial Building Efficiency
6. Energy Extension Service
7. Energy Efficient Agricultural Processes (IFAS)

COMMERCIAL/RETAIL PROGRAMS

1. Energy Audit Program
2. Publications
3. Energy Management Plans

GOVERNMENT OFFICIALS WORKSHOP PROGRAM

State/Local

Building Efficiency

Procurement

Services

INDUSTRY

Florida industries have played a major part in energy conservation education. Many are committed to energy conservation as an essential state-wide goal. Various utility companies and other industries have produced or provided supplementary curriculum and public information materials approved by academic review committees, audio-visual materials, technical and general speakers, financial assistance to training programs for teachers and students and seminars on our private economics system. Their efforts can be made more effective by:

1. Following the state conference, industry and utility company representatives can coordinate and pool their materials for wide-spread dissemination.
2. Industry and utility company representatives' participation in the regional and district workshops.
3. Funding Energy Today and Tomorrow Program.

Take a bus to work!

Following the state conference, regional and district workshops, another state conference would be held a year later to bring programs initiated in each region together for review. Emphasis should be given to assessment of program success and the most effective programs would form the basis or model for state-wide energy education programs.

EVALUATION AND ASSESSMENT

I. Program evaluation activities will be tailored as process and summating evaluation activities for each component - sub-component.

ENVIRONMENTAL RESIDUAL EFFECTS

Florida is heavily dependent on imported fuels. This energy master plan will lead to a reduction in energy consumption. As imported fuels increase in cost, there will be pressure to use those which are cheaper and more pollution prone. This program, by reducing consumption or consumption increase, will help protect Florida's air and water quality.

There are no detrimental residual environmental effects which can be projected based on the needs assessment which preceded this master plan. The environmental impact of this project will be positive in all aspects.

APPENDIX

PROJECT AND PROGRAM IDEAS

POSTERS

POSTER CONTEST

E G CARDS

TEACHERS' K-12 GUIDE

MATH GUIDES

ENERGY ACTIVITIES BOOK

SLIDE/TAPE PROGRAMS

MASS MEDIA SPOTS

STUDENT ACTION AWARDS PROGRAM

GUIDE - BUILDING SOLAR HOT WATER HEATING SYSTEMS

GUIDE - HOME ECONOMICS TEACHERS

GUIDE - VOCATIONAL-TECHNICAL TEACHERS

SCHOOL NEWSPAPER AWARDS PROGRAM

ENERGY EDUCATION WEEK ACTIVITIES

MANAGEMENT GUIDES

BOOK COVERS

PRE-READER ACTIVITIES GUIDE

QUOTES

"This difficult effort (implementating a national energy plan) will protect our jobs, our environment, our national independence, our standard of living, and our future..."

"Our energy policy...will demand the best of us--our vision, our dedication, our sense of common purpose."

"We have met challenges before and our nation has been the stronger for it."

"This difficult effort will be the moral equivalent of war."

James Earl Carter

President of the United States

"Florida is committed to environmental education. The environment consists of only two measurable entities--matter and energy. We recognize our responsibility to encourage energy education at all levels with increased energy efficiency as one of its final objectives."

Ralph D. Turlington

Florida Commissioner of Education

"...I think what's going to have to be done in the next three or four years is for everyone, but especially for the students who are just entering the world, to re-evaluate the whole position in this country that we're facing in regard to what we do for money and what money will buy and what money won't buy."

"...What we're going to have to do is to change the patterns of consumption in this country and in the rest of the world. The same thing is true of energy...we're going to have to think in terms of energy units instead of in terms of money..."

"...So we have to learn something new, and it's going to be rough."

Margaret Mead
Boston, 1975

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"Conservation in the energy fields will, I believe, be the most significant contribution to environmental protection in this century, or any other century for that matter, because we must get control over the rate of increase of demands for energy, which has been growing at an exponential rate....Conservation has now been indispensable."

James R. Schlesinger

At National Wildlife Federation
Annual Meeting, Washington, D. C.,
1977